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EXAMINER

NGUYEN, LE V

ART UNIT

PAPER NUMBER

2174

DATE MAILED: 08/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/757,930

Applicant(s)

ERTEN ET AL.

Examiner

Le Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 16 June 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2,3,5-10,12-16,31,33 and 34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2,3,5-10,12-16,31,33 and 34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

PD

### **DETAILED ACTION**

1. This communication is responsive to an amendment filed on 9/27/04.
2. Claims 2, 3, 5-10, 12-16, 31, 33 and 34 are pending in this application with claims 1, 11 and 17 being independent claims. Claims 1, 4, 11 and 32 have been cancelled; claims 2, 3, 5-7, 9, 10, 12 and 13 have been amended; and claims 33 and 34 have been added. This action is made Final.
3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

### ***Claim Objections***

4. Claims 3, 13 and 34 are objected to because of the following informalities:  
  
Claim 3 recites the limitation "the input of data" in line 2. There is insufficient antecedent basis for this limitation in the claim.  
  
Claim 13 recites the limitation "the same naked hand or finger acquired from the camera" in line 4, which will be interpreted to mean the naked hand or finger acquired from the camera. There is insufficient antecedent basis for this limitation in the claim.  
  
Claim 15 recites the limitations "the position, viewing angles sensitivity, and... camera" in lines 2-3 and "the analysis" in line 3. There are insufficient antecedent bases for these limitations in the claims.

Claim 34 recites the limitations "the human user" in lines 6 and 11. There are insufficient antecedent bases for these limitations in the claims. Appropriate corrections are required.

***Claim Rejections - 35 USC § 112, first paragraph***

5. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

6. Claims 33 and 34 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. New subject matter "excluding the display" on line 6 of claims 33 and claim 34 was not properly described in the application as filed. Therefore, the new subject matter will not be treated.

Claim 7 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The claimed subject matter for which the specification is not enabling is: "a vector on the plane of the display" in line 2 of page 2.

***Claim Rejections - 35 USC § 112, second paragraph***

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claims 2, 7, 8, 9, 12-16 and 34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2 recites the limitation "the positioning of a pointing icon on the display" in lines 2-3. The examiner will interpret "the positioning of a pointing icon on the display" to mean a position of a pointing icon on the display. There is insufficient antecedent basis for this limitation in the claim.

Claims 15 and 16 depend on cancelled claim 11. The examiner will treat claims 15 and 16 as depending upon claim 34.

Claim 34 recites the limitations "based on the image coordinates of the detected positions" of line 15. The examiner will interpret "based on the image coordinates of the detected positions" to mean based on the detected positions. There are insufficient antecedent bases for these limitations in the claims. Furthermore, it is unclear what is meant by the limitations "detecting the positions that the user has pointed to in the images captured by the camera" of claim 34(e) and "based on the image coordinates of the detected positions, setting the boundaries of the virtual display space" of claim 34(f). The examiner will interpret claim 34(e) to mean "detecting the positions that the user has pointed to" and claim 34(f) to mean "based on the detected positions, setting the boundaries of the virtual display space".

The examiner has given applicant examples of the errors that occur in claims 2, 3, 7, 13, 15, 16 and 34. These errors should be used as a template when reviewing claims 2, 5-10, 12, 14, 31 and 33.

***Claim Rejections - 35 USC § 103***

9. Claims 2, 3, 5, 6, 8, 10, 31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rekimoto et al. ("Rekimoto") in view of Lyons, and further in view of Rekimoto's admitted prior art.

As per claim 33, Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display, the system comprising:

a camera, capable of sensing the spectrum of light invisible to the naked human eye, the camera positioned to capture an image including at least one naked finger or naked hand of a human user (figs. 10 and 14(A-B); col. 21, line 65 through col. 22, line 3; *invisible such as infrared light*);

a means for identifying at least one naked finger or naked hand of the human user in the image captured by the camera as a pointer and a means for establishing a mapping between the positions that the human user's naked finger or hand is pointing to and the corresponding region of the display of the device (Rekimoto: figs. 4 and 6; col. 1, line 57 through col. 2, line 2; col. 7, lines 53 through col. 8, line 3).

Rekimoto's main invention does not teach a camera, capable of sensing the spectrum of light visible to the naked human eye; however, in Rekimoto's disclosure of the prior art, a camera is disclosed, capable of sensing the spectrum of light visible to

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the naked human eye (col. 1, lines 18-21; e.g. *light emitting pen*). Therefore, it would have been obvious to an artisan at the time of the invention to include Rekimoto's admitted prior art teaching of a camera capable of sensing the spectrum of light *visible* to the naked human eye to Rekimoto's teaching of a camera capable of sensing the spectrum of light *invisible* to the naked human eye in order to provide users with a remote input that does not require user proximity to the screen.

Rekimoto still does not explicitly disclose a means for defining a virtual display space around the finger or hand of the human user in the image captured by the camera. Lyons teaches a means for defining a virtual display space around the finger or hand of the human user in the image captured by the camera (col. 6, lines 42-55). Therefore, it would have been obvious to an artisan at the time of the invention to include Lyons teaching of defining a virtual display space around the finger or hand of the human user in the image captured by the camera to Rekimoto's teaching of the finger or hand of the human user being captured by the camera given that virtual reality applications permit exciting interaction between a user and a computer and integrating the immersive with the non-immersive approach provides the advantage of giving the user the impression of being "in" the virtual reality environment using normal body movements.

As per claim 2, the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display comprising controlling/commanding a position of a pointing icon on the display (Rekimoto: fig. 19; col. 18, lines 41-51).

As per claim 3, the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display comprising means for controlling/commanding an input of data into the device using the display (Rekimoto: fig. 19; col. 18, lines 41-51).

As per claim 5, the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display comprising means for selecting different regions of the display by changing a position, attitude, or presentation (Rekimoto: figs. 5 and 7-10).

As per claim 6, the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display comprising means for selecting, highlighting, or defining a particular point or region on the display (Rekimoto: col. 9, lines 21-29).

As per claim 8, the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display wherein the pointing icon on the display can be registered by the camera that has in its field of view the naked hand or finger of the human user (Rekimoto: fig. 1, 2, 11-13 and 15-22).

As per claim 10, the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display comprising:

a) means for selecting or highlighting a specific item or icon on the display (Rekimoto: col. 9, lines 21-29);



b) means for activating a specific process, program, or menu item represented on the display (Rekimoto: fig. 5; col. 9, lines 21-29); and

c) means for writing, scribing, drawing, highlighting, annotating, or otherwise producing marks on the display (Rekimoto: fig. 5; col. 9, lines 21-29).

As per claim 31, the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display comprising another camera and wherein the pointing icon on the display can be registered by the other camera (Rekimoto: fig. 12, *elements 4A and 4B*).

10. Claims 12-16 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lyons in view of Rekimoto et al. ("Rekimoto"), and further in view of Rekimoto's admitted prior art.

As per claim 34, Lyons teaches a method for defining a virtual display space for a human user of a device to interact with the device through its display, comprising the steps of:

positioning a camera to capture an image including at least one naked finger or naked hand of the human user (fig. 7; *described is a camera-based gesture input environment wherein motion of the limbs/extremities/hands/fingers or body is indicative of a desired operation*);

identifying the at least one naked finger or naked hand of the human user in the image captured by the camera as a pointer (fig. 7; *a representation of the user's gestures, i.e. the limbs/extremities/hands/fingers or body, appears on a display screen, allowing for selection of commands*);

asking the human user to position the limbs or body to point to specific points on the display (col. 12, lines 17-20; col. 13, lines 10-23);

capturing images of the human user as the user points to the specific points (col. 13, lines 10-23);

detecting the positions that the user has pointed to from the images captured by the camera (figs. 5 and 7; col. 15, lines 8-10);

based on the detected positions, setting a boundary of the virtual display space and designating within the boundary, a continuous finite space to be the virtual display space (figs. 5 and 7; col. 3, lines 46-56; col. 4, line 44 through col. 4, line 16; col. 15, lines 8-10).

Lyons does not explicitly disclose positioning a naked finger or naked hand to point to specific points on the display. Rekimoto teaches a method for the human user of a device to interact with the device through its display comprising positioning a naked finger or naked hand to point to specific points on the display (figs. 10 and 14(A-B)). Therefore, it would have been obvious to an artisan at the time of the invention to include Rekimoto's teaching of positioning a naked finger or naked hand to point to specific points on the display to Lyons teaching of positioning the limbs or body to point to specific points on the display in order to provide the advantage of giving the user the impression of being "in" the virtual reality environment using normal body movements.

However, neither Rekimoto's main invention nor Lyon teaches a camera, capable of sensing the spectrum of light visible to the naked human eye; however, in Rekimoto's disclosure of the prior art, a camera is disclosed, capable of sensing the spectrum of

light visible to the naked human eye (Rekimoto: col. 1, lines 18-21; e.g. *light emitting pen*). Therefore, it would have been obvious to an artisan at the time of the invention to include Rekimoto's admitted prior art teaching of a camera capable of sensing the spectrum of light *visible* to the naked human eye to Rekimoto's teaching of a camera capable of sensing the spectrum of light *invisible* to the naked human eye in order to provide users with a remote input that does not require user proximity to the screen.

As per claim 12, the modified Lyons teaches a method for defining a virtual display space for a human user of a device to interact with the device through its display wherein at least one characteristic that distinguishes the pointing object/naked hand or finger from other objects in the image registered by the camera is known a priori (Rekimoto: fig. 19; col. 18, line 52 through col. 16, line 44; Lyons: col. 1, lines 46-56; col. 3, lines 46-50; col. 13, lines 27-42).

As per claims 13 and 14, the modified Lyons teaches a method for defining a virtual display space for a human user of a device to interact with the device through its display wherein at least one characteristic that distinguishes the pointing object/naked hand or finger from other objects in the image from the camera is determined based on analysis of at least one image of the pointing object/naked hand or finger acquired from the camera (Lyons: figs. 5 and 7) and wherein at least one characteristic that distinguishes the pointing object/naked human hand or finger from other objects, whose rendition are present in the image from the camera is obtained by acquiring at least two images from the camera, one with the pointing object in view of the camera and one without, and comparing the two sets with one another (Rekimoto: figs. 1, 7-9 and 14(A-

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B); col. 7, lines 5-11; col. 7, line 49 through col. 8, line 57; col. 9, lines 60-65; col. 10, lines 45-60; col. 15, line 60 through col. 16, line 36).

As per claim 15, the modified Lyons teaches a method for defining a virtual display space for a human user of a device to interact with the device through its display wherein adjustments or modifications are made to position, viewing angles, sensitivity, and other settings of the camera pursuant an analysis of the data or image retrieved from the camera (Lyons: col. 2, lines 32-35; col. 12, lines 35-44; Rekimoto: col. 2, lines 24-42).

As per claim 16, the modified Lyons teaches a method for defining a virtual display space for a human user of a device to interact with the device through its display wherein at least part of the procedures for the method is carried out using at least in part a computing mechanism available on one or more of the following: the display, or the camera, or the pointing device, or the device producing the signal shown on the display, or the device producing the pointing icon on the display (Rekimoto: figs. 1, 7-9 and 14(A-B); col. 7, lines 5-11; col. 7, line 49 through col. 8, line 57; col. 9, lines 60-65; col. 10, lines 45-60; col. 15, line 60 through col. 16, line 36).

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rekimoto et al. ("Rekimoto") in view of Lyons as applied to claim 33, and further in view of Edwards et al. ("Edwards").

As per claim 7, the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display comprising a naked hand or finger for entering information into the system and can be

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used in conjunction with various software applications (Rekimoto: figs. 1,7-9 and 14(A-B); col. 7, lines 5-11; col. 7, line 49 through col. 8, line 57; col. 9, lines 60-65; col. 10, lines 45-60; col. 15, line 60 through col. 16, line 36). The modified Rekimoto does not explicitly disclose the pointing object/naked hand or finger to be used to define a vector on the plane of the display that indicates a direction and magnitude relative to or with respect to an item on the display or a region of the display. Edwards teaches a system for interacting with displays wherein the pointing object to be used to define a vector on the plane of the display that indicates a direction and magnitude relative to or with respect to an item on the display or a region of the display (col. 8, lines 12-21).

Therefore, it would have been obvious to an artisan at the time of the invention to include Edwards' teaching of a computer aided design tool, wherein the pointing object to be used to define a vector on the plane of the display that indicates a direction and magnitude relative to or with respect to an item on the display or a region of the display, to the modified Rekimoto's teaching of a system for interacting with displays that includes drawing capabilities to provide users with an environment capable of incorporating multiple applications and capabilities to enhance a user's individual task.

12. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rekimoto et al. ("Rekimoto") in view of Lyons as applied to claim 2, and further in view of Applicant's Admitted prior art.

As per claim 9, although the modified Rekimoto teaches a display system for use with a device having a display and for interacting with the device through the display comprising means for sensing the naked finger/pointing object's position relative to the

position of a pointer icon on the display (Lyons: fig. 5; col. 7, lines 39-55), the modified Rekimoto does not explicitly disclose the system to include a means for correcting the offsets between the position of the naked finger/pointing object, or reflection, or effect thereof on the display as observed by the user or by the camera, and the position of the pointer icon on the display. However, Applicant's admitted prior art teaches a system for interacting with displays and all devices that use such displays to include a means for correcting the offsets between the position of the pointing object, or reflection, or effect thereof on the display as observed by the user or by the sensor or the camera, and the position of the pointer icon on the display (page 21, lines 6-9). Therefore, it would have been obvious to an artisan at the time of the invention to include Applicant admitted prior art's teaching of a system for correcting the offsets between the position of the pointing object and the position of the pointer icon on the display to the modified Rekimoto's system for sensing the naked finger/pointing object's position relative to the position of a pointer icon on the display in order to reduce the margin of error concerning the position of the pointing object and the position of the pointer icon on the display.

### ***Response to Arguments***

13. Applicant's arguments with respect to claims 33 and 34 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Oh (US 5,616,078) teaches a motion-controlled video entertainment system.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

***Inquires***

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Lê Nguyen whose telephone number is **(571) 272-4068**. The examiner can normally be reached on Monday - Friday from 7:00 am to 3:30 pm (EST).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kristine Kincaid, can be reached on (703) 308-0640.

The fax numbers for the organization where this application or proceeding is assigned are as follows:

(703) 872-9306 [Official Communication]

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

LVN  
Patent Examiner  
July 21, 2005

*Kristine Kincaid*  
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